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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/747,887	12/29/2003	Yong Seon Park	11037-212-999	6919

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MORGAN, LEWIS & BOCKIUS, LLP.
2 PALO ALTO SQUARE
3000 EL CAMINO REAL
PALO ALTO, CA 94306

EXAMINER	
CANTELMO, GREGG	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 08/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/747,887	PARK, YONG SEON	
	Examiner	Art Unit	
	Gregg Cantelmo	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 December 2003 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12/29/03 & 8/5/05.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed December 29, 2003 and August 5, 2005 have been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance. Figure 1 is described as conventional art in the specification and thus is held to be a prior art teaching. As such, Fig. 1 should be amended to include the Prior Art label.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a fuel cell simulator which does not include the electrochemical components (electrodes, electrolyte) of the fuel cell, does not reasonably provide enablement for a simulator which includes these components. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Claims 1-9 are directed to a fuel cell simulator and as disclosed, the fuel cell simulator does not include the electrochemical components (electrodes, electrolyte) of the fuel cell. Claims 1-9 do not preclude the presence of electrochemical components from the device defined therein and thus would not be a fuel cell simulator but an actual fuel cell. Applicant is advised to amend the claims to preclude those elements which are not disclosed as being part of the simulator, in particular the electrodes, catalyst materials and electrolyte.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The "coolant" as recited in the claims is not definite. According to the fuel cell simulator, the "coolant" is provided with a heater to heat the "coolant". By providing a heater in the "coolant" line the fluid therein is a heated fluid.

b. Claim 4 recites the limitation "the pressure sensors" in line 3. There is insufficient antecedent basis for this limitation in the claim.

c. Claim 5 recites the limitation "the temperature sensors" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,103,412 (Hirano).

Hirano discloses a fuel cell system comprising: an air flow field with air exhausting means 12 of the supplied air after the air is heated in the fuel cell and the pressure is reduced after flowing from the inlet line 4 to the exhaust line 12, a fuel flow field supplied with fuel gas and a fuel exhausting means 11 which exhausts heated and reduced-pressure effluent expelled from the fuel cell stack, a coolant flow field supplied with cool water and exhausting the coolant from the stack after the coolant is heated by the fuel cell and the pressure therein reduced, a moisture supplying field 9 for supplying moisture to the fuel which is then flown into the fuel cell and electrodes which represent reactant consuming fields connected to respective flows which reduce the pressure of the reactants and serve to heat the reactants in the electrochemical process of the cell (Fig. 1 as applied to claim 1).

While the claim recites a "simulator system" the structure of the claimed system is not patentably distinct from that of Hirano.

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0005486 (Baker).

Baker discloses a fuel cell testing system comprising: an air flow field in the fuel cell 42 between lines 59a-59b and air exhausting remains of the supplied air via line 61 after the air is heated via heater 58, the air flow path further provided with a pressure control means 55 which is capable for reducing the pressure of the supplied air; a fuel flow field in the fuel cell 42 between lines 49a-49b and fuel exhausting remains of the supplied fuel via line 51 after the fuel is heated via heater 48, the fuel flow path further provided with a pressure control means 45 which is capable for reducing the pressure of the supplied fuel; coolant flow field in the fuel cell 42 between lines 69a and 69b and exhaust line 71 for exhausting the coolant after the coolant is hated via heater 66 the coolant path further including a valve 65 which is capable of reducing the pressure of the coolant; humidifiers 46 and 56 constitute moisture-supplying fields for supplying moisture to the fuel and air and thus to the fuel cell stack 42; the fuel cell stack comprises air and fuel-gas consuming fields, i.e. the electrodes which reduce the pressure of the heated reactants in the electrochemical process of the cell (Fig. 3 as applied to claim 1).

Each of the fuel, air and coolant flow fields comprises control vales 45, 55 and 65 respectively and heaters 48, 58 and 68, respectively (Fig. 3 as applied to claim 2).

Each of the fuel, air and coolant flow fields are provided with temperature sensors 106 (Fig. 4), 126 (Fig. 5) and 148 (Fig. 6, respectively (as applied to claim 3).

Each control valve is connected to the controller and responsive to the measured conditions including pressures detected by pressure sensors 50, 60 and 70 (Fig. 3 as applied to claim 4).

Each heater is connected to the controller and responsive to the measured conditions including temperatures detected by temperature sensors 106, 126 and 148 (as applied to claim 5).

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in apparatus, article, and composition claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

In the case of claims 4 and 5, the arrangement of Baker has a structure which is capable of performing the same controlling functions as recited therein and thereby meets the structure of the system.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of either JP 62-195856 (JP '856) or U.S. Patent Application Publication No. 2001/0028970 (Sano).

The teachings of Baker, with respect to claim 1, have been discussed above and are incorporated herein.

In addition Baker discloses providing mass flow meters in the flow lines for detecting the flow rates (Figs. 1 and 4-5).

The differences not yet discussed are of the reactant fields having both a mass flow meter and pump (claim 6) or of the pump in communication with the mass flow meters (claim 7).

JP '856 discloses providing mass flow meters and recycling blowers or pumps in the recycle line wherein the blowers are regulated by the mass flow meters (abstract and Figs. 1 and 4). The motivation for incorporating the recycling units of JP '856 is that it improves the efficiency of the system by reusing unused exhaust. Sano teaches that the flow rate of the fuel and air exhausts can be monitored by flow rate meters and the rate of exhaust is then regulated by the measured properties including the flow rate (Fig. 1 and paragraph [0051]).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Baker by incorporating the recycling units of either JP '856 or Sano since it would have improved the efficiency of the system by reusing unused exhaust and controlling the flow rates of fluids in the system in response to the operating state of the fuel cell system.

13. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker in view of U.S. Patent No. 6,268,074 (Siepierski).

The teachings of Baker, with respect to claim 1, have been discussed above and are incorporated herein.

In addition Baker discloses providing humidification to the air component in the system (Figs. 1 and 4-5).

The differences not yet discussed are of the reactant fields having both a mass flow meter and pump (claim 6) or of the pump in communication with the mass flow meters (claim 7).

Siepierski discloses a water injection system for a fuel cell wherein water is pumped via pump 40 into the air flow though an injector 30 and a flow meter 31 detects the mass of flow of both air and water, the water by reducing the temperature of the air is heated to a state of equilibrium (Fig. 1 and column 4, line 28 through column 5, line 45).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Baker by incorporating the humidification system of Siepierski since it would have provided a means for improving the moisture content in the fuel cell.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

gc
August 15, 2006

Gregg Cantelmo
Primary Examiner
Art Unit 1745